# Whitewater Complex Fire Long Term Strategic Analysis

## Overview

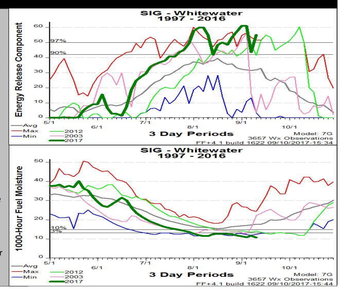
This Long Term Strategic Analysis covers the Whitewater Complex and includes the Whitewater, Little Devil, and Scorpion Fires. The Whitewater Complex is mostly on the Willamette National Forest. The Whitewater Fire was detected on 23 July 2017 and has burned into the Mount Jefferson Wilderness to the east with some private to the west. Little Devil and Scorpion Fires are burning entirely within the Willamette National Forest and were detected on 10 August 2017 and 28 August 2017, respectfully. With demand for resources from other fires in the area and western United States and values at risk, suppression efforts have been limited at times and the complex has been a long duration event and potential to persist into the fall.

Fuels are primarily composed of mixed conifer timber litter and understory. Variability in continuity and composition of the fuel composition occurs in the fuel bed, from dense understory to open mixed conifer stands. The mixed conifer and associated brush components are common in lower elevations and dense hemlock/mixed conifer and associated understory is common at elevations above 6000 feet. Numerous other past fires have occurred within the area along with fuels treatments.

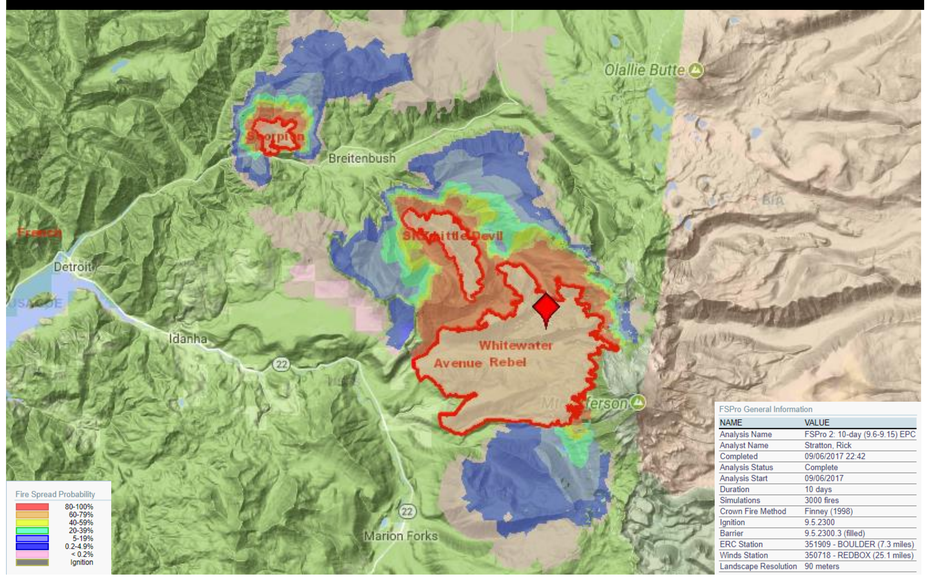
This High Cascades region is a cold-summer subtype of the mediterranean climate that is rare and predominately found at scattered high-altitude locations along the west coast of North America. From the 1980-2010 period, annual precipitation was 83.54" and a warmest Monthly Mean Temperature of 59.9 degrees. For the Willamette Basin's 2017 winter, snowpack was 152% of normal with maximum pack on 9 March 2017. Typical meltout date is the 30th of June, yet this year it was on the 3rd of July. The summer has been relatively dry. With the dry summer, the most recent Standardized Precipitation Index over three months is at moderately dry. For the past year, the SPI is reported at very wet.

## Current Situation

A SIG was developed for the Whitewater Complex that includes the Boulder Creek (4 miles SW at 3,570') and Redbox (19 miles N at 3,250') RAWs. The ERCs at the beginning of September exceeded the 20 year historic maximums. The ERC as of 9/10 is at the 90th percentile due to recent precipitation. The 1000-hr fuel moistures also exceeding 20 year historic minimums at the beginning of September and have risen slightly but still above the 97th percentile. The 20 year average ERC and 1,000 hour fuel moisture levels continue to steadily decline and rise respectively through the rest of September and October.




## FSPro Run




FSPro General Information

| NAME | VALUE |
|---|---|
| Analysis Name | FSPro 2. 10-day (9.6-9.15) EPC |
| Analyst Name | Stratton, Rick |
| Completed | 09/06/2017 22:42 |
| Analysis Status | Complete |
| Analysis Start | 09/06/2017 |
| Duration | 10 days |
| Simulations | 3000 fires |
| Crown Fire Method | Finney (1998) |
| Ignition | 9.5 2300 |
| Barrier | 9.5 2300 3 (filled) |
| ERC Station | 351909 - BOULDER (7.3 miles) |
| Winds Station | 350718 - REDBOX (25.1 miles) |
| Landscape Resolution | 90 meters |

**Willamette National Forest**

NORTHWEST INCIDENT MANAGEMENT TEAM NW 8

**Limitations & Validation** - There are limitations to all of the long-term decision support models. All of these models are based on historical weather records, weather forecasts and standardized fuel model mapping. Although expert opinion is used in making adjustments to much of this information, there is a lot of variability in natural systems and the complex interactions in our fire environment that cannot be modeled. All models are simplifications of reality, and there are assumptions within the fire spread models that also need to be considered. The results from these models are based on the best available current data; models and information are also limited by this same information.

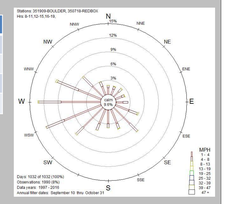
The Nash Fire Long Term Strategic Analysis should be reassessed regularly or as dictated by weather or fire activity.

## Large Fire Growth

- Large Fire Growth Thresholds were identified contributing to days of large growth for the Whitewater Complex based on observations of fires within the complex, other recent fires in the area, and the Willamette FDRA Pocket Card.

| Variable | 500+ acre day | 1,500+ acre day |
|---|---|---|
| ERC | 40 | 46 |
| Max Temp | >85 | >88 |
| Min RH | <24% | <21% |
| Max RH | <65% | <50% |

**Worse Case Fire Behavior**
- Low nighttime Relative Humidity Recovery
- East/Fohen Winds
- Haines of 5 or 6



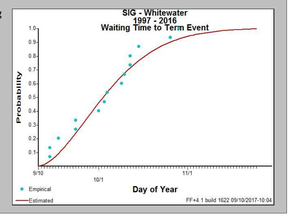

- Wind direction was also analyzed with a wind rose to look at predominate southwesterly winds.

## Season End Event

Potential Season Ending Events were considered:
Large Low off the Gulf of Alaska or Pineapple Express
- At least 1" of rain in a three day period after 10 September for a period of 1997-2016.
- By 1 October there is a 46% of a season ending event.

Combination of small events
- Shorter day length with diminishing solar angle
- Sporadic precipitation
- Cooler temperatures with higher humidity

NWCC PSA Season Ending Date
- 50% probability by 27 September
- 75% probability by 6 October

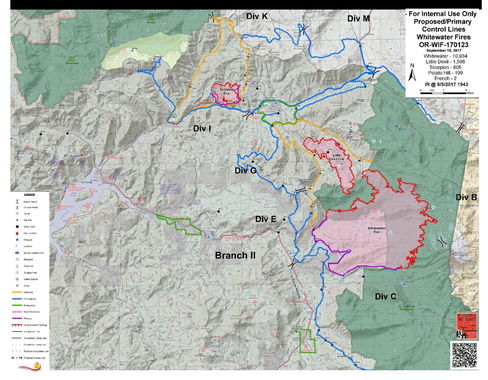



## P-A-C-E

**Primary-Alternate-Contingency-Emergency**

| |
|---|
| **Primary Operational Plan** |
| **Whitewater/Little Devil:** Secure direct perimeter containment lines on the south and west flanks of Whitewater. Monitor by air and IR the remaining fire edge on Whitewater and Little Devil. Allow Little Devil fire to continue to back down on the southwest flank to Devil's Creek and north to Breitenbush River. Prepare Alternate indirect lines for possible ignition operations.<br>**Scorpion:** Use direct perimeter containment on the south flank and checking actions on the west and east flanks to keep fire from progressing south impacting Breitenbush Hot Springs Resort and private homes. Monitor by air and IR remaining fire edge. Prepare Alternate indirect lines for possible ignition operations. |
| **Alternate Operational Plan** |
| **Whitewater/Little Devil:** Implement ignition operations on identified Alternate containment lines to keep fire from progressing west impacting high valued private timber stands, community of Idana, Whispering Falls campground, and to the south impacting Marion Forks business' and residences.<br>**Scorpion:** Implement ignition operations on identified Alternate containment lines to keep fire from progressing north to Bull of the Woods Wilderness area, northwest impacting popular recreation sites, and west to the Breitenbush River corridor, and the community of Detroit. |
| **Contingency Plan** |
| If Alternate plan is unsuccessful, implement ignition operations on identified Contingency lines to keep fire from progressing south, west and north impacting values identified in the Alternate plan. Notify Warm Springs Tribe if fire threatens to move east onto Tribal lands. If fire progresses northeast impacting the Olallie Lake Scenic Recreation Area, make appropriate notifications, evacuations and area closures. |
| **Emergency Plan** |
| Evacuate public and implement structure protection plan using point protection tactics. |

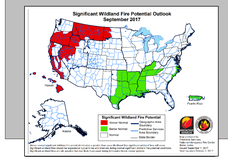
## P-A-C-E Map

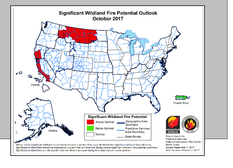



## Wildland Fire Outlook

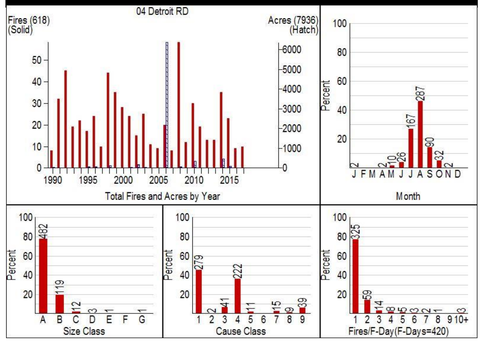
Above Normal significant large fire potential for the entirety of Oregon expected for September followed by Normal significant large fire potential. Temperatures for the geographic area rose above average in late June and remained elevated through July and August. Precipitation since mid-June has been well below average. Portland and Seattle set records for the number of consecutive days without rain in August. The latest climate outlooks indicate that temperatures for the region are most likely to continue to be above average through November. Precipitation is likely to be below average for September and possibly above average for the remainder of the outlook period.

The northwest geographic area is at the peak of fire activity in late August due to extreme fire danger from lack of rainfall. High fire danger is expected to persist into Septembert. A decline in fire activity is expected after about the 10th of September. By mid-September decreasing solar radiation received and longer nights will allow for fuel moistures to begin recovering. Should a season-slowing weather event not occur, this will be sufficient to allow for the fire activity across the northwestern states to begin to decrease significantly late in the month.



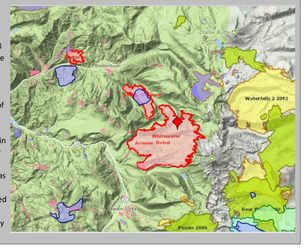




## Fire History




## Fire History

The Detroit Ranger District low wildfire load both in numbers of fires and size of fires; although to the east and in Central Oregon a heavy wildfire load occurs. This is due most imparts to the higher precipitation amounts, fuel types and costal influences. The Detroit District of the Willamette National Forest fire occurrence for the last 20 years consists of 618 fires for 7,936 acres. Interestingly, 80% of those acres burned occurred on the Puzzle fire that started 8/19/2006, was human caused, and burned 6,340 acres. through 2016 there has been 3,002 fires for 24,446 acres, an average of 115 fires per year with an average annual acreage burned of 940 acres for the Bend Ranger District. The minimum number of fires in a year was ~15 in 1993. The maximum number of fires in a year was ~180 in 2008 and the maximum number of acres burned in a year was ~7,000 in 2014. The majority (63%) of fires occur in July and August. 47% of fires are caused by lightning. 82% of fires are suppressed at a final size of 1/4 acre or less, with approximately 99%




## Values at Risk

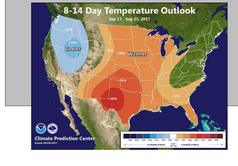
| Category | Expected Value |
|---|---|
| Aqua Retardant Avoidance | 2,263 acres |
| Class 1 Airsheds | 4,533 acres |
| County: Jefferson, OR | 0.39 acres |
| County: Linn, OR | 684 acres |
| County: Marion, OR | 8,868 acres |
| Electric Transmission Lines | 1.37 miles |
| Est Ground Evac Time: 1-2 Hrs | 2,399 acres |
| Est Ground Evac Time: 2-4 Hrs | 3,635 acres |
| Est Ground Evac Time: 4-6 Hrs | 3,053 acres |
| Est Ground Evac Time: 6+ Hrs | 406 acres |
| Estimated Population | 1.2 |
| Habitat: Northern spotted owl | 3,973 acres |
| Habitat: Steelhead | 0.00 miles |
| IRA: Mt. Jefferson Addition IRA | 0.06 acres |
| IRA: Mt. Jefferson, North IRA | 1,086 acres |
| IRA: Olallie IRA | 0.37 acres |
| Jurisdictional Agency: USFS | 9,522 acres |
| Mgmt Req: Designated Viewshed | 1.02 acres |
| Mgmt Req: LSR North | 357 acres |
| Natl Scenic Byways | 0.19 miles |
| Natl Scenic Trails | 1.25 miles |
| ORDEF - Values / White Bark Pine | 209 acres |
| Retardant Avoidance | 54.7 acres |
| Wilderness: Bull of the Woods Wilderness | 1.54 acres |
| Wilderness: Mount Jefferson Wilderness | 4,614 acres |

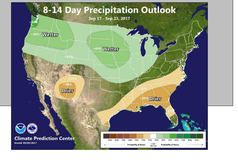
## Findings

Analysis covers the Whitewater, Little Devil, and Scorpion Fires.
- Previous growth on complex was under all time records for ERC and 1000-hr tlfm.
- Fire growth on the Complex was precipitated by above average warm and dry conditions following a wet winter.
- Weather conditions triggering 500+ acre fire growth were observed to be ERC above 40, temperatures above 85°F, RH below 24%, and max RH recovery of 65%.
- Weather conditions triggering 1,500+ acre fire growth were observed to be ERC above 46, temperatures above 88°F, RH below 21%, and max RH recovery of 50%.
- Worse Case Fire Behavior to watch out for is: low nighttime relative humidity recovery, east/fohen winds, and Haines Index of 5 or 6.
- Inversion plays a role in fire behavior daily, many times extending late into the afternoon.
- Seeing some convective influence from other fires along with associated smoke impacts.
- Heavy dead ground fuels will continue to hold heat through precipitation events and have the potential to move under a high pressure dominated pattern until season end.
- Area has improved from the moderate to severe drought years of 2014-2016, but remains abnormally dry.
- While the ERC has dropped from record levels, with limited precipitation, it is back above the 97th percentile, although ERC average declines into the fall.
- The weather outlook for September, October and November is for warmer than normal temperatures and below normal precipitation in September.
- The Pacific Northwest Predictive Services group expects above normal wildland fire potential for September.
- Season ending events include Large Low off the Gulf of Alaska or Pineapple Express
  - At least 1" of rain in a three day period after 10 September for a period of 1997-2016.
  - By 1 October there is a 46% of a season ending event.
- A combination of small events leading to season ending including: Shorter day length with diminishing solar angle, sporadic precipitation, and cooler temperatures with higher humidity.
- NWCC PSA Season Ending Date shows NW02 with a 50% probability of season ending event by 27 September and a 75% probability of season ending event by 6 October.

## Weather Outlook

Models are in relatively good agreement that the first substantial fall-like storm system will move into the Pacific Northwest early next week beginning around Monday, September 18th. This storm system has the potential to bring below average temperatures and a good chance for widespread wetting rains over a multi-day period. As a result, the Climate Prediction Center (CPC) general outlook suggests odds for above-normal precipitation and below average temperatures in the September 17th-23rd time period is higher than normal across the Pacific Northwest. Towards the end of the time period, models diverge considerably more on possible outcomes with some suggesting additional storm systems impacting the Pacific Northwest while other models suggest high pressure may build back over the Pacific Northwest. Either way, the odds for an extended period of hot temperatures such as multiple days of 85F+ temperatures in the lower elevations decreases precipitously in late September.




## Five Day Weather Matrix

**Whitewater, Little Devil, French, Scorpion, Potato**

**Weather For Planning Purposes** **Updated: Sunday, Sep 10**
**Elevation: On average 4300 feet** Incident Meteorologist (IMET) Ian Morrison

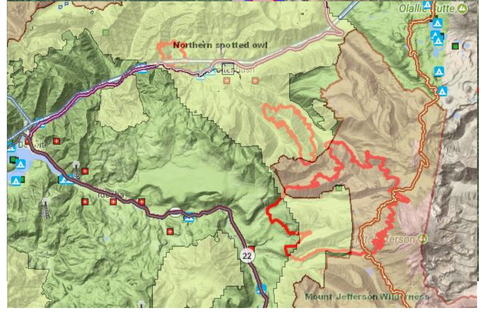
| | Mon | Tue | Wed | Thu |
|---|---|---|---|---|
| Date | 11-Sep | 12-Sep | 13-Sep | 14-Sep |
| Watch/Warning | None | None | None | None |
| MinT/MaxT | 52 / 84 | 55 / 79 | 49 / 66 | 40 / 59 |
| MaxRH/MinRH | / 25% | 52% / 35% | 54% / 44% | 90% / 39% |
| TSTM Chance | 0% | 0% | 5% | 0% |
| Wind Morning | VRB 5 | VRB 3 | VRB 5 | VRB 5 |
| Wind Aftn / Eve | E7G12 | W 8 | W 8 | W 9 |
| Haines Index (High) | 3 | 3 | 3 | 4 |
| Mixing Hgt (MSL) | 12 kft | 12.0 kft | 9.5 kft | 9 kft |
| 24 hr Rain Amt | 0.00 | 0.00 | 0.00 | 0.00 |
| LAL | 1 | 1 | 1 | 1 |


## Values at Risk

**Natural/Cultural Resource and Infrastructure Values - High**

The fire has the potential to threaten or impact the following resources:
- Communities of Breitenbush, Detroit, Idanha, and Marion Forks to the north, east, and south.
- Highly valued private timber lands to the east and southeast.
- Transmission lines
- Mount Hood National Forest Olallie Recreation Area to the north.
- Boy Scouts of America (BSA) Camp Pioneer to the south.
- The Pacific Crest Trail (PCT), a National Scenic Trail to the east.
- Jefferson Park - an area of heavy recreation with the Mt Jefferson Wilderness.
- Short hair reed grass and white bark pine, both are sensitive species to fire and suppression activities.
- A considerable amount of Northern Spotted Owl critical habitat is threatened by both the fire and planned suppression strategies.

## Values at Risk




## Long Term Assessment Team

The Whitewater Complex Long Term Assessment Team consisted of:
- J. Bradley Washa - SOPL/FBAN/OSC1
- Mike Boomer – SOPL(T)
- Rick Stratton – LTAN
- Jim Hampton - FBAN
- Colby Neuman, Jon Bonk, Ian Morrison - IMET

Created: 10 September 2017